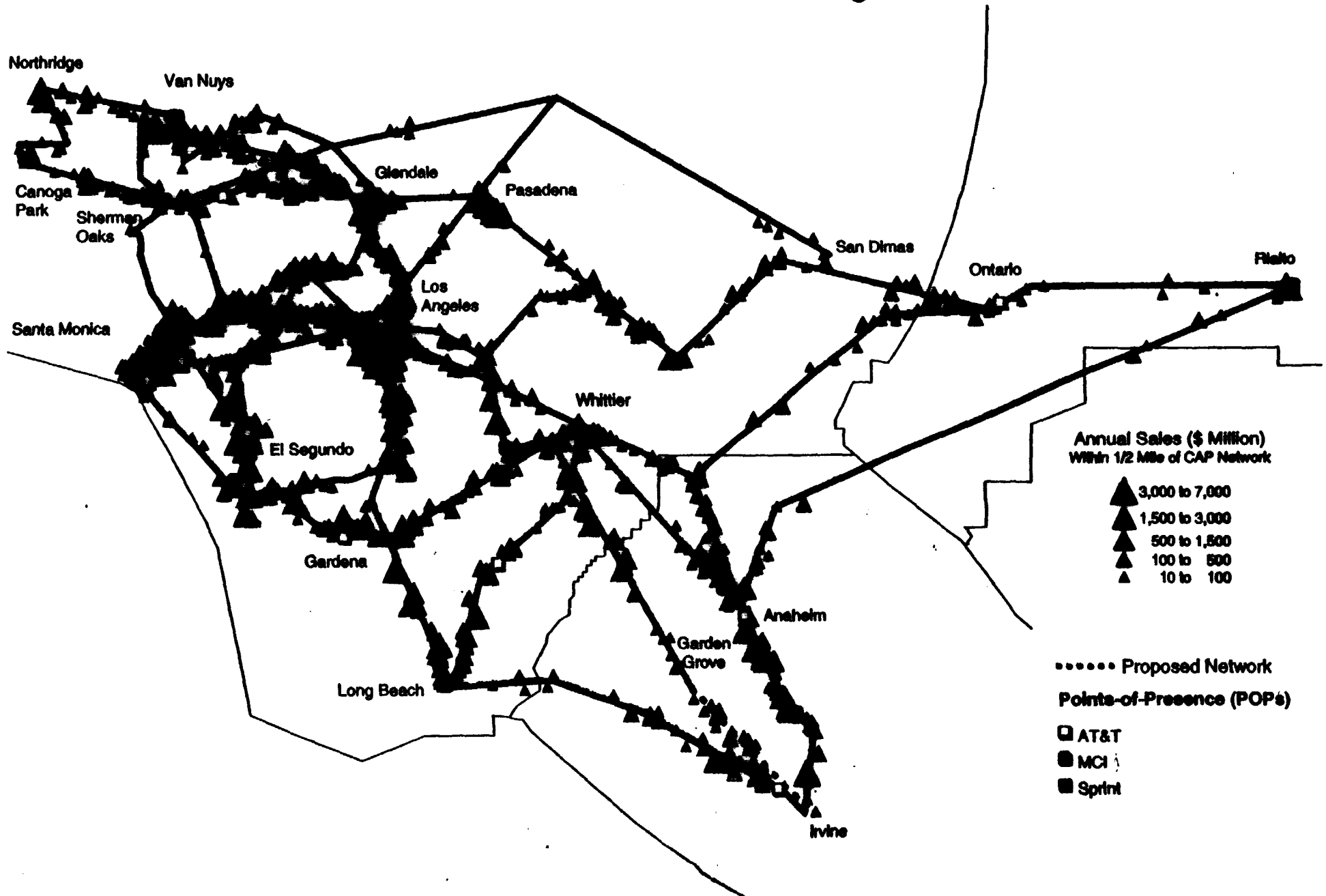


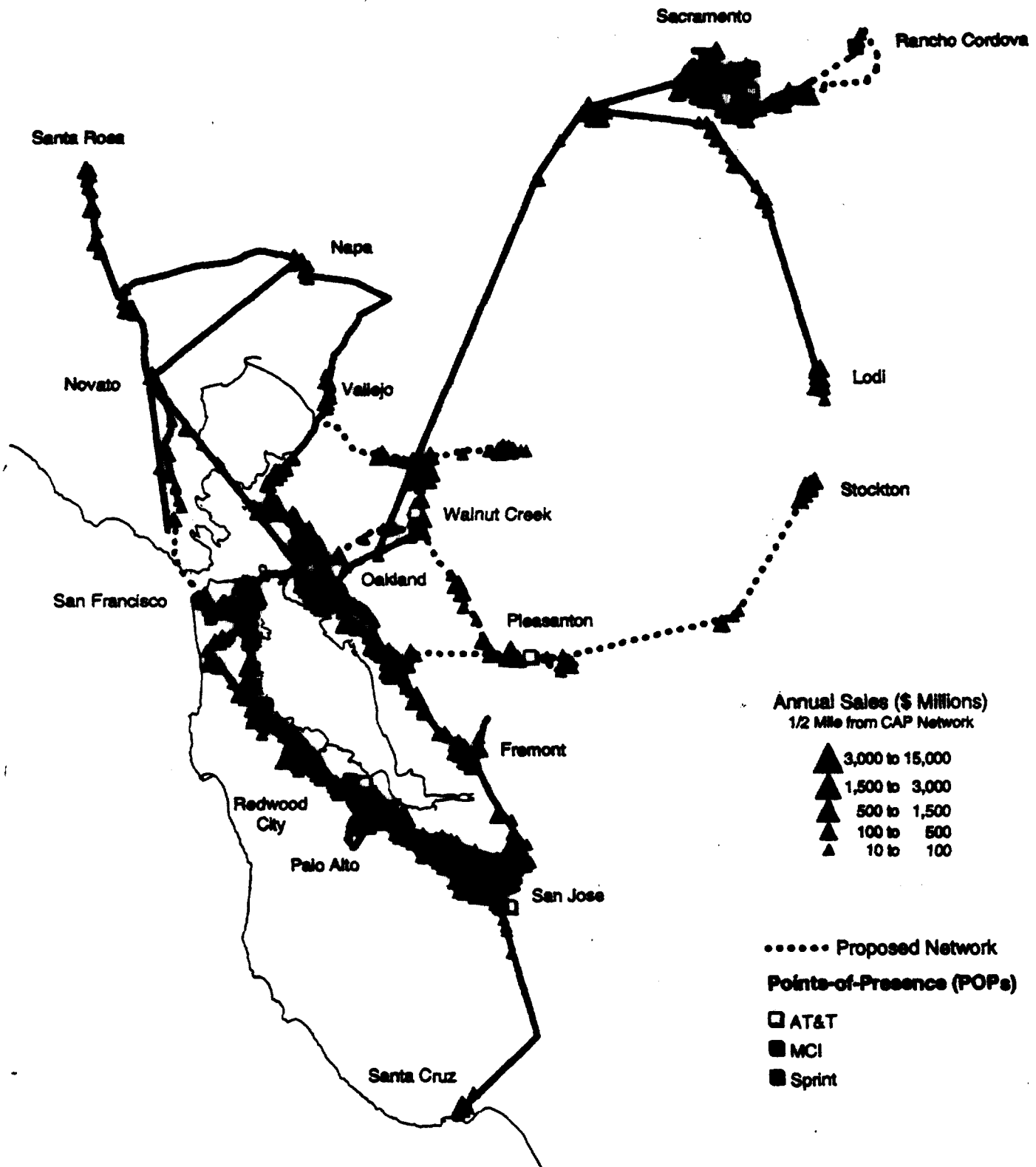
***Figure 8: Access to CAPs: Businesses in Greater Los Angeles***

**Figure 8**  
**Access to CAPs:**  
**Businesses in Greater Los Angeles**



***Figure 9: Access to CAPs: Businesses in Northern California***

**Figure 9**  
**Access to CAPs:**  
**Businesses in Northern California**



CAPs' increasing share of access services demonstrates Pacific Bell's vulnerability to competition. As Pacific Bell loses share, it loses revenue in two ways. First, it loses revenue from traffic carried over CAP facilities. Second, competition in special access services from CAPs, IXC's, and self-suppliers has forced Pacific Bell to lower its prices dramatically resulting in lower revenue on all sales that it does make. Since 1988, for example, Pacific Bell has reduced the price of interstate DS1 service by 46% from \$738 to \$397 per month.<sup>57</sup>

Building on their success in the access market, CAPs have begun moving toward becoming full service telecommunications companies. "TCG has already invested millions of dollars in local fiber optic networks and switching facilities in the Los Angeles, San Francisco and San Diego areas in anticipation of our transformation into a full service competitor in California..."<sup>58</sup> MFS Intelenet is, according to its 1994 annual report, "the first national full-service, facilities based communications company since the breakup of AT&T to offer one-stop shopping to medium and small businesses."<sup>59</sup> Expanding into local exchange services and bundling local, access and toll services will give these and other CAPs greater opportunities for revenue and profit growth.

CAPs have multiple strategies for becoming full service providers. Most are expanding their networks and adding switching capability to support local services. The CAP investment is now well in excess of \$1 billion,<sup>60</sup> and is likely to continue to grow rapidly. Moreover, CAPs are installing switches to provide local services for both business and residential customers. In California, MFS has installed ATM and central office switches in San Francisco and Los Angeles. TCG has installed

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<sup>57</sup> DS1 prices are for two channel terminations and six miles of transport. Prices = (2 channel terminations x Channel Termination Charge) + Fixed Channel Mileage Charge (CKT) + (6 miles x Variable Channel Mileage Charge (IOM)).

<sup>58</sup> Quote from Steve Sulser, Vice President, General Manager of TCG's Los Angeles network as reported in "TCG, California's Largest Local Telecommunications Competitor Files petition to Become 'The Other Local Phone Company'," *PR Newswire*, August 31, 1995.

<sup>59</sup> MFS 1994 annual report, p. 16.

<sup>60</sup> "A CAP Market Update: No Future for the Independents?," *The Yankee Group*, July 1993, p. ii.

SESS switches in San Francisco and Los Angeles. IntelCom Group, Linkatel and Brooks Fiber Communications have also installed switches in California and are expanding into other services.<sup>61</sup> All of these CAPs except MFS plan to provide local exchange services in California to residential as well as business customers. Figure 10 summarizes competitive access providers' existing networks and plans for entering the local exchange market.

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<sup>61</sup> "Pacific Bell Competitive Environment Report"

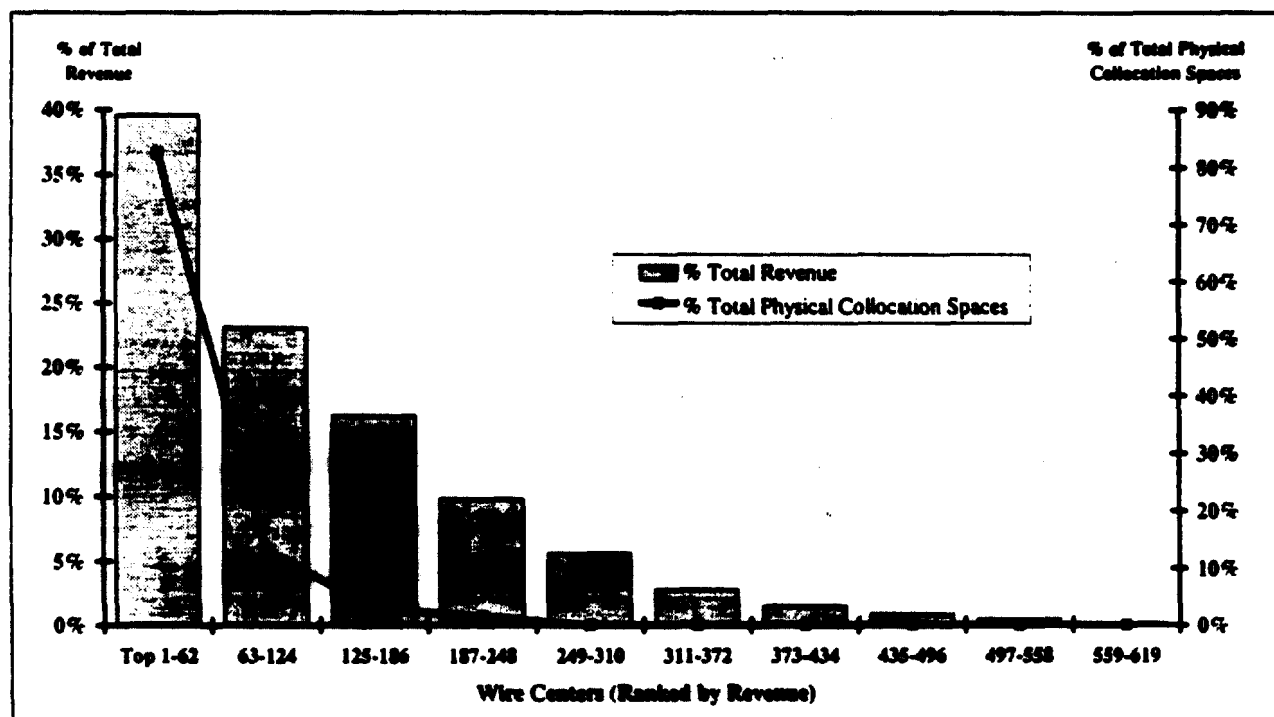
**Figure 10: Competitive Access Providers in California**

<b>CAPs</b>	<b>Networks in California</b>	<b>Switches</b>	<b>Plans for Entry into LEX</b>
<b>MFS</b>	<i>Existing:</i> San Francisco, Los Angeles, Sacramento, San Jose, San Diego <i>Under Development:</i> Orange County, Oakland	<i>Existing:</i> San Francisco, Los Angeles	<i>Geographic Area:</i> Statewide <i>Market Segments:</i> Business, Operator Services
<b>TCG</b>	<i>Existing:</i> San Francisco, San Jose, Oakland, Los Angeles, San Diego, Anaheim	<i>Existing:</i> San Francisco, Los Angeles, San Diego	<i>Geographic Area:</i> Statewide <i>Market Segments:</i> Residence, Business
<b>ICG Access Services</b>	<i>Existing:</i> San Francisco, Los Angeles, Oakland, Santa Rosa	<i>Existing:</i> Oakland, Los Angeles, Irvine	<i>Geographic Area:</i> Statewide <i>Market Segments:</i> Residence, Business
<b>Brooks Fiber</b>	<i>Existing:</i> San Jose, Sacramento <i>Under Development:</i> Fresno, Bakersfield, Stockton	<i>Planned:</i> Sacramento, San Jose	<i>Geographic Area:</i> Statewide <i>Market Segments:</i> Business, Operator Services
<b>MCI Metro</b>	<i>Existing:</i> Los Angeles, San Francisco, San Diego, Sacramento	<i>Plans to install switches</i>	<i>Geographic Area:</i> Statewide <i>Market Segments:</i> Residence, Business, Operator Services
<b>ELI</b>	<i>Existing:</i> Sacramento <i>Under Development:</i> San Diego, Los Angeles	<i>Existing:</i> Sacramento <i>Plans to install another switch in Sacramento</i>	<i>Geographic Area:</i> Statewide <i>Market Segments:</i> Residence, Business, Operator Services
<b>GST Telecom</b>	<i>Existing:</i> San Bernardino, Riverside, Rialto <i>Under Development:</i> Colton, Ontario, Palm Springs, East Bay		<i>Geographic Area:</i> Statewide <i>Market Segments:</i> Residence, Business, Operator Services
<b>Time Warner</b>	<i>Existing:</i> San Diego		
<b>Linkatel</b>	<i>Existing:</i> Los Angeles, Orange County, San Diego, Long Beach	<i>Plans to install switching equipment</i>	<i>Geographic Area:</i> Los Angeles, Long Beach, Orange County <i>Market Segments:</i> Residence, Business,

*Sources: Trade press: MFS 1994 annual report; "Pacific Bell Competitive Environment Reports"; "Fiber Deployment Update - End of Year 1994," FCC Industry Analysis Division, June 1995, p.37-39; and Applications for Certificates of Public Convenience and Necessity to Provide Competitive Local Exchange Service.*

Since the FCC's 1992 and the CPUC's 1995 collocation orders have been implemented, and as more CAPs deploy switching capability, this expansion is likely to become more profitable because CAPs will be able to offer their customers a broader range of services. When a CAP is collocated with the central switch of the LEC wire center, it has access to all of the customers served by that central office of the LEC. This will make it easier and less costly for CAPs to expand into the less densely populated regions of metropolitan areas and beyond. In California, there are already collocation arrangements in 46 wire centers, giving CAPs access to 57% of Pacific's DS1 and 75% of its DS3 traffic.<sup>62</sup> Figure 11 shows graphically how CAPs are targeting Pacific Bell's highest revenue wire centers for collocation.

**Figure 11: Physical Collocation Spaces are Heavily Concentrated in Pacific Bell's High-Revenue Wire Centers**



Note: Average 1Q95 monthly revenues. Tandems not included. Physical Collocation is also called Expanded Interconnection Service - Physical Collocation (EIS-PC).

Source: Pacific Bell, CC Docket 94-141

<sup>62</sup> "Pacific Bell Competitive Environment Report," April 1995, p. 4.



In addition to expanding its own network and services, MFS is aggressively pursuing the exchange market through acquisition. In 1994, it acquired RealCom Office Communications, Inc., the second largest provider of shared tenant services, and Centex, a San Francisco based toll aggregator that offered integrated local and long distance services to business customers. Centex is Pacific's largest telemanagement service company customer. These two acquisitions nearly tripled MFS Intelenet's customer base and provided the company with a sales force knowledgeable about business exchange, access and interexchange calling patterns.<sup>63</sup> Moreover MFS has the ability to migrate Centex's customer base onto its own network, resulting in a significant traffic loss to Pacific Bell.

**6. *Cable companies are preparing and investing to expand into telecommunications services, including local exchange services.***

Cable companies are preparing to offer local exchange services in the U.S. as soon as federal and state regulations permit. They are well positioned to compete for exchange services, particularly to residences, because of the extensive network that now passes more than 95% of U.S. homes. The industry invested more than \$20 billion in plant and equipment during the 1980s. Much of the recent investment has been fiber optic transport and advanced digital electronic equipment which permit two-way telephony. According to the National Cable Television Association, "by late 1992, 77% of cable plant was capable of two-way communications, and virtually all newly built cable plant is two-way capable. In short, the cable industry stands poised to expand beyond its core business and become a full participant in the nation's telecommunications infrastructure."<sup>64</sup>

A recent study has estimated that the costs of upgrading existing cable plant to provide telephony services (assuming the cable company has already upgraded its backbone transmission plant to fiber optics) would be about \$207 per subscriber. If both telephone and distributed video

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<sup>63</sup> "Pacific Bell Competitive Environment Report," October 1994, p. 12; MFS 1994 Annual Report, p. 16.

<sup>64</sup> National Cable Television Association, "Cable Television and America's Telecommunications Infrastructure," 1993, pp. 5.7 from the *Information Infrastructure Sourcebook*, Version 3, Vol. 1, John F. Kennedy School of Government, Harvard University.

services were provided, the cost per subscriber would increase only to \$297 due to significant economies of scope in the provision of telephony and distributed video services. The analysis further demonstrates that upgrades to existing plant represent a large cost advantage to deployment of new networks and that there may be economies of scope between distributed video services and PCS. The author concludes, "this outcome increases the value of the incumbent cable television network."<sup>65</sup> Another recent study drew similar conclusions about the economics of cable entry into telephony:

"The reason for the enormity of the financial implications of this technological change is that, just as is the case of the new wireless technology, *the cost of adding telephony to a cable system is far less than the cost of the existing telephone plant* (emphasis in original). The cost of upgrading a cable system by adding fiber trunks is less than \$150 per subscriber. The cost is so low that the reduction in maintenance expenditures alone is adequate to more than pay for the upgrade, so effectively the cost is zero. The cost of adding telephony to an upgraded cable system is less than \$400 per subscriber, and it is only incurred for the subscribers who purchase the new service."<sup>66</sup>

TCI, Viacom and Continental Cablevision provide good examples of how cable companies are expanding and enhancing their networks to provide telephony service. TCI, the largest cable company in the Bay Area, has reportedly spent \$500 million on its fiber network in the Bay Area and is installing switches and amplifiers required for two-way communication.<sup>67</sup> According to TCI Executive Vice President Brendan Clouston, "TCI is laying the groundwork to become a one-stop provider of voice, video and data services in the Bay Area starting next year [1996]...The Bay Area is a critical market for TCI, and we have to move aggressively to meet the competition."<sup>68</sup>

Viacom, the second largest cable company in the Bay Area, has announced its own plan to provide local phone service "in Castro Valley on a trial basis, with plans to make Viacom's service

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<sup>65</sup> Reed, David P., "The Prospects for Competition in the Subscriber Loop: The Fiber-to-The-Neighborhood Approach," presented at the Twenty-first Annual Telecommunications Research Policy Conference, September 1993.

<sup>66</sup> Sirlin, Philip J., "The Digital Battlefield: Bellopolity -- The End of the Game," March 22, 1994, p. 13

<sup>67</sup> Bank, David, "Foundation of an Information Age," *San Jose Mercury News*, December 5, 1994, p. 4D. The article reports that switches have already been installed in Sunnyvale.

<sup>68</sup> Pelline, Jeff, "Cable's TCI Reveals Bay Area Game Plan," *San Francisco Chronicle*, July 19, 1995, p. C1.

broadly available in Castro Valley within nine months after the service is authorized....Later, it will be expanded to the rest of Viacom's territory — in San Francisco and parts of Marin, Sonoma, Napa, Alameda and Contra Costa counties."<sup>69</sup> When TCI and Viacom are merged, they will have a fiber ring that circles the Bay and will provide cable coverage to 90% of Bay Area consumers. TCI is preparing to offer telephony over its cable network. It has been testing a technology for delivering telephony services over its network<sup>70</sup> and will be introducing its first telephony service in early 1996 with @Home, a high-speed internet access that will run over its existing cable system.<sup>71</sup> Continental, the third largest cable company in the U.S., has just announced that it will spend \$700 million in the Los Angeles and the California Central Valley over the next five years to add telephone, data and video-on-demand services to its network. The company has said that it will introduce phone service within a year of regulatory approval.<sup>72</sup>

Through their alliance with Sprint, TCI-Cox-Comcast will soon be a strong competitor of Pacific Bell. Not only do they have a strong geographic presence in all major metropolitan areas and many smaller communities throughout California, but they also gain significant benefits from Sprint (which is discussed further below):

"The alliance also gives cable operators a nationally recognized brand name, to sell new-fangled radio phones, and a war chest of funds to help build networks to link their traffic. More importantly, Sprint's expertise in network planning and switching can harness the power of cable's high-capacity wires into homes...The cable partners have agreed to add Teleport Communications Group to the venture with Sprint. TCG is the cable-owned alternative local network service that is building phone and data networks in major US cities..."<sup>73</sup>

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<sup>69</sup> Pelline, Jeff. "Viacom Launching Phone Trial." *San Francisco Chronicle*, October 4, 1995, p. B1.

<sup>70</sup> TCI and Teleport are jointly testing the technology in Illinois. *Telco Competition Report*, November 10, 1994, p. 7.

<sup>71</sup> "Tele-Communications In Deal For Internet Access." *The New York Times*, May 3, 1995.

<sup>72</sup> "Continental Cable Jumps Into the Telephone Arena." *San Francisco Chronicle*, September 1, 1995, B3.

<sup>73</sup> "Sprint, 3 Cable Firms to Form Phone Venture." *The Wall Street Journal*, October 25, 1994, p. A3.

**7. Private networks are growing rapidly and compete directly with Pacific Bell in access, exchange and interexchange services**

Because user demands are so highly concentrated in telecommunications services, one of the most important forms of competition is "self-supply" by large, intensive users. Self suppliers of telecommunications services can and do compete with Pacific Bell in two main ways. First, they bypass the public switched network for local exchange, access and interexchange calls. Second, many large self suppliers have spare capacity in their private telecommunications infrastructure and can sell this capacity to third parties.

Private Branch Exchanges (PBXs), which are essentially small central office switches, enable companies to self supply local exchange service, routing calls around the Pacific Bell network and hence providing a source of competition for Pacific Bell's services. This competition takes many forms. First, PBXs can operate as stand-alone switching hubs or as remote switching nodes on private networks consisting of many switches and lines. Second, PBXs greatly reduce the need for access lines because calls of multiple users are aggregated over one line, thereby competing directly with Pacific Bell for access lines.<sup>74</sup> Third, PBXs are controlled by software so they can easily be programmed to route intraLATA calls to a competitors' network.<sup>75</sup> Finally, because PBXs can handle "intercom" (local calls to other stations within the company) and offer many enhanced services, they enable businesses to provide their own intra-exchange services that they would otherwise purchase from a LEC.<sup>76</sup>

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<sup>74</sup> For example, a business customer with 1000 access lines could, by buying or leasing a PBX, reduce the number of access lines to 150, an 85% reduction. Hence, the PBX replaced 850 access lines. In addition, the PBX would also be used to provide many enhanced services that the customer would otherwise have purchased from the LEC.

<sup>75</sup> In California, IXC's are offering to pay the cost of reprogramming businesses' PBXs to dial 10-XXX on toll calls. See "Local Toll-Call Business Wired for Fierce Competition," *Sacramento Bee*, January 1, 1995, p. E1.

<sup>76</sup> In business systems, Pacific Bell offers a set of special central office services to large business customers called Centrex. Centrex competes directly against PBXs in the market for exchange services, which depend upon Pacific Bell for network access services. In spite of that supposed competitive advantage, Pacific Bell has actually lost a majority of the business systems market to PBXs. In fact, according to Northern Business Information, Centrex represents only about 11% of business telephone systems lines. (Northern Business Information, "U.S. PBX and Related Markets," 1993 Edition, Exhibit 3-6.)

As of 1994, there were 4.5 million PBXs in the U.S. with 100 or more lines.<sup>77</sup> Thus, an estimated 765,000 of the largest local exchange customers in California bypass the public network for a substantial portion of their local access lines and exchange traffic.<sup>78</sup> Many of these self-suppliers are large users of telecommunications services. For example, in 1986, Stanford University installed a 12,000 line PBX and miles of fiber optic cable as part of a \$20 million project to build a campus wide voice and data transmission system.<sup>79</sup> Other telecommunications users have private telecommunications networks which link disparate locations around the state or the world. According to a European Commission estimate, there are more than 700,000 privately owned telecommunications networks in the United States.<sup>80</sup> Calls placed on these networks frequently bypass the publicly switched networks for local exchange, access, interexchange and international services.

A quite different, but important form of competition from private networks is satellite-based transactions processing systems using Very Small Aperture Terminal (VSAT) technology. These networks serve very low density locations in rural areas just as well as they serve urban sites. Los Angeles-based Unocal Corp. and Chevron Corp. are using VSAT networks for communications among retail stations and credit card authorization, while Torrance-based Toyota Motor Sales USA uses VSAT for communications among offices and dealers around the country.<sup>81</sup> The number of VSAT systems has increased markedly in recent years, and recent innovations in satellite technology

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<sup>77</sup> Northern Business Information, "U.S. PBX and Related Markets," 1993 Edition, p. 32.

<sup>78</sup> This estimate is based on the percent of PBX and Centrex trunks in California to total U.S. PBX and Centrex trunks (17%). See *Statistics of Communications Common Carriers*, Federal Communications Commission, 1993/1994 Edition, p. 18.

<sup>79</sup> PR Newswire, January 18, 1985.

<sup>80</sup> "Survey of Telecommunications: The Death of Distance", *The Economist*, October 6, 1995, p. 8.

<sup>81</sup> "Local Oil Companies Gaze Skyward to Boost Corporate Communications," *Los Angeles Business Journal*, August 15, 1994.

will continue to drive costs down, resulting in even more rapid growth in the future.<sup>82</sup> In many cases, the local VSAT users would otherwise have added additional local access lines to serve their transactions processing needs. Depending on technological developments, VSAT systems may begin offering voice-grade services as well, completely bypassing the local exchange carrier. If so, Chevron would effectively be competing with Pacific Bell and other LECs by offering "basic exchange service" to its retail affiliates.

Self suppliers can also compete with LECs by expanding into the wholesale or retail markets. Sprint started off in 1973 as the microwave communications subsidiary of Southern Pacific Railroad, SP Communications.<sup>83</sup> As its microwave network, which was initially positioned along railroad track rights of way grew, it became economic to provide private line and interexchange services to high volume businesses and, eventually, residential customers.<sup>84</sup> WilTel, the former telecommunications subsidiary of the Williams Company, which is now owned by LDDS MetroMedia, was originally built to help the Williams Company track and control usage of their extensive network of natural gas pipes. Later, they began to sell long distance telecommunications transport on the wholesale and retail level.<sup>85</sup>

Like WilTel, other gas and electric utilities have thousands of miles of fiber optic cable already in place to meet their own communications needs. Many of these companies are now leasing conduit and excess fiber capacity to CAPs and IXC's.<sup>86</sup> Utility companies are also developing customer applications to run over their internal networks rather than the public switched network.

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<sup>82</sup> The digitization of satellite communications will generate huge increases in transmission capacity and large decreases in costs and prices. Data compression technologies will further reduce the effective cost of satellite communications. The miniaturization of electronic components and improvements in signaling processing capabilities are enabling users to employ much smaller satellite dishes.

<sup>83</sup> "Antitrust Suit," *The Washington Post*, March 28, 1978, D9.

<sup>84</sup> Norris, Floyd, *The Associated Press*, February 27, 1980.

<sup>85</sup> See *PR Newswire*, September 24, 1985 and *Business Dateline: Tulsa World*, May 3, 1989.

<sup>86</sup> "Check Out These Potentially Lucrative Utility Fiber Plans," *Fiber Optics News*, April 4, 1994.

Utilities such as Southern California Edison are experimenting with methods to use their fiber backbones in combination with existing cable operators such as TCI or new wireless distribution networks to provide Advanced Energy Management Systems (AEMS) to electricity customers.<sup>87</sup> Pacific Gas and Electric Co. is also planning a project with TCI which aims to use existing fiber and cable lines to monitor and control customers electricity usage.<sup>88</sup> Electric utilities could use these networks to offer local telephone service as well. This pattern of large self-suppliers becoming service providers for third parties has also occurred widely in overseas markets. According to a recent survey of telecommunications in *The Economist*:

"Once [private internal] networks are constructed, spare capacity on them can be resold to other businesses and operators, local legislation permitting. For example SITA (Societe Internationale de Telecommunications Aeronautiques), the airline industry's immense global network has plans to offer voice services to multinationals. Many other businesses have suddenly noticed either that they have rights of way along which can easily run fiber-optic cables, or that they already have networks for their internal communications. For example, a group of European railways has set up an organization called Hermes to carry telephone traffic across Europe's many international borders; in France, Generale des Eaux expects telecommunications to provide 10% of its turnover by the end of the century; and in Japan group of regional electricity utilities is building a network."<sup>89</sup>

**8. *Wireless carriers will expand into "basic" exchange services as the price of service continues to fall and the number of users increases dramatically***

Dramatic increases in market penetration and usage show that cellular service increasingly competes with wireline, especially for intensive users who get high value-added from communications, and users who need site-specific access for short durations. Prices for cellular equipment and services have been dropping rapidly<sup>90</sup> and cellular companies are investing heavily to

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<sup>87</sup> "SOCAL Ed to test interactive TV Link to Let Customers Manage Energy Use," *Electric Utility Week's Demand-Side Report*, February 2, 1995.

<sup>88</sup> John Lippman, "Telecommunications: TCI Eyes 'smart home' Design Plan with Microsoft and PG&E," *Los Angeles Times*, November 10, 1993.

<sup>89</sup> "Survey of Telecommunications: The Death of Distance", *The Economist*, October 6, 1995, p. 8.

<sup>90</sup> In recent years, the price of cellular phones has dropped seven-fold, and the inflation adjusted price of equipment and service has fallen by more than 50%. *The Geodesic Network II*, 1992, p. 4.23.

expand and enhance their networks.<sup>91</sup> Rapid growth is expected to continue to be driven by increased network capacity and competition.<sup>92</sup> These trends in cellular are especially clear in California. The growth rate in cellular subscribers for both the U.S. and California has been nearly 40% over the last three years, and with three million cellular subscribers at the end of 1994, California is the largest cellular market in the country. Cellular companies recognize the importance of California and are investing heavily in the state; while California represents 12% of cellular subscribers in the U.S., it has captured 19% of cellular capital investment.<sup>93</sup>

Because the monthly fee for a cellular "access line" is well above Pacific Bell's price for local exchange service, cellular would seldom literally "replace" wireline access. However, as usage rates fall, users increasingly will use their cellular phones to place calls, because the price of a cellular call is sometimes less than the price of a wireline call. For example, in the Bay Area, Cellular One offers unlimited night and weekend calling and GTE Mobilnet offers unlimited weekend calling covering very large "home" areas<sup>94</sup> for a flat monthly fee of \$15. Customers who purchase that option can avoid toll charges by placing calls on their cellular phones.

Wireless services are also rapidly moving beyond traditional local and toll calling into data services and even high capacity transmission. Using wireless modems, more and more individuals are

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<sup>91</sup> Cumulative capital investment in the cellular industry reached almost \$14 billion in 1993. *The Wireless Factbook*, Cellular Telecommunications Industry Association, Spring 1994, p. 9.

<sup>92</sup> Recent and expected developments in technology underlying the wireless networks, however, will expand the capacity and capability of all wireless telephony by a multiple of five to 20 times present levels. For example, the cellular systems in the Los Angeles area have present theoretical capacity of 700,000 users but the deployment of digital cellular systems would increase that capacity to 14 million. Capacity can also be increased almost indefinitely through the addition of more cells. (See Huber, Peter W., "Competition and Open Access in the Telecommunications Markets of California," February 8, 1994, p. 51.).

<sup>93</sup> "Cellular in the U.S. and California: Important Facts and Figures." Cellular Carriers Association of California, 1995.

<sup>94</sup> In the Bay Area, Cellular One's "home" area extends from Cloverdale (north of Santa Rosa) to Bradley (south of Monterey). GTE Mobilnet has an even larger service area extending from Cloverdale in the north to Santa Barbara in the south and east to Davis. (Prices provided in company brochures: GTE MobileNet, 12/94; Cellular One, 9/6/95.



transmitting computerized data and faxing documents over cellular networks. Also, wireless service providers are introducing a wide range of data products for businesses. McCaw Cellular designed a wireless package-tracking system for UPS and has recently introduced a wireless data communications network called AirData.<sup>95</sup> WinStar Telecommunications Group recently introduced a wireless high-capacity service that competes with LEC T1 lines. This product is positioned as a cost-effective alternative to wired short-haul links up to five miles. The installation fee is comparable to LEC prices, but recurring prices will be 10% to 15% below that of the LECs.<sup>96</sup>

PCS will also drive the development of new wireless services. The PCS auction was completed in March 1995, and PCS networks are expected to be operational in 1996.<sup>97</sup> When PCS is delivered, it is expected to be priced significantly below cellular today, competing directly with LEC local services. Aggressive pricing will be possible because the cost of implementing PCS is estimated to be low (about \$400 per subscriber)<sup>98</sup> As Figure 12 shows, nearly half of the adult population is expected to use wireless services by the year 2000. Moreover, it is projected that by 2000, about 20% of wireline message revenue will be diverted to wireless services.

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<sup>95</sup> "McCaw's Wireless Data Vision," *Telephony*, March 20, 1995.

<sup>96</sup> "WinStar Offers Wireless Alternative in the Local Loop," *Network World*, February 27, 1995, p. 30.

<sup>97</sup> See *PC Week*, February 14, 1994. Also see Sirlin, Philip J., "The Digital Battlefield: Bellopoly -- The End of the Game," March 22, 1994, p. 11.

<sup>98</sup> Sirlin, Philip J., "The Digital Battlefield: Bellopoly -- The End of the Game," March 22, 1994, pp. 11-12.

**Figure 12: Projected Penetration of Wireless Services**

Year	Projected Wireless Subscribers <sup>(a)</sup> (millions)	Projected Penetration Rate <sup>(b)</sup> (subscribers/adult population)	% Wireline Message Revenue Lost to Wireless
1995	30	15%	2%
1996	39	20%	3%
1997	49	25%	6%
1998	60	30%	10%
1999	73	37%	14%
2000	87	45%	20%

Source: Wireless and Cable Voice Services: Forecasts and Competitive Impacts, Vanston and Rogers, Technology Futures Inc., (1995), pp. 10, 32 (baseline scenario).

(a) A low growth scenario projects subscriptions will grow to 57 million by 2000. Another forecast by EDS projects 75 million wireless subscribers by the year 2000. See *An Ice Age is Coming to the Wireless World*, Carl Aron, EDS, (1995) p. 10.

(b) Total adult population is defined as those persons 18 years and older. Adult population is estimated to be 195 million. See 1994 Statistical Abstract, Table No. 16.

In addition to competing directly with wireline services, PCS is likely to be integrated into existing cable networks providing cable companies with an alternative means of providing telephony services.

"Cox has been at the forefront among cable companies in pursuing PCS. The company has won a Pioneer's Preference award for the Los Angeles-San Diego, California, MTA for developing a way to use the cable network in the PCS infrastructure. Cox's contribution has been finding a way for PCS base stations to be located in cable electronics facilities, and then using the cable plant — fiber or coax or both — as the backhaul network to take the PCS call out to the switch...Cox has successfully demonstrated this technology approach a number of times. It has run numerous trials, including an ongoing testbed in San Diego, where particular radio propagation, voice quality, and other characteristics have been measured. As far back as 1992, Cox demonstrated a successful PCS call between its chairman and the FCC commissioner, using a portable PCS phone and cable plant."<sup>99</sup>

<sup>99</sup> The Yankee Group, *PCS: The Implementation Phase*, February 1995, p.57.

California is an especially attractive market for prospective PCS providers as demonstrated by the PCS marketing and technology trials that have been done. Of the 199 outstanding PCS experimental licenses, almost a quarter (43 licenses) involve tests in California.<sup>100</sup> Furthermore, over one-third of experimental PCS licenses issued in California are issued to cable companies.<sup>101</sup> The tests are being held in the Los Angeles and San Francisco LATAs, which represent 72% of Pacific Bell's revenues.<sup>102</sup>

***9. The Sprint Telecommunications Venture will be a formidable competitor to Pacific Bell by delivering a wide array of communications and entertainment services***

Sprint is an interesting competitor in several respects. First, with nearly 6 million local access lines in 19 states, Sprint is already a major provider of local exchange services through its United and Centel subsidiaries. Second, like MCI, Sprint is about to receive a major infusion of foreign capital, with \$4 billion in equity investments by France Telecom (FT) and Deutsche Telecom (DT). Third, Sprint is part of major alliance of cable companies, the Sprint Telecommunications Venture, which has announced plans to offer telephony services over cable networks and wireless local exchange services over PCS networks as well.

"Sprint, the nation's third-largest long-distance company and its cable-television partners, TCI, Comcast, and Cox Communications Inc., announced that they would invest \$4.4 billion to build wireless networks that would serve markets with a total population of 182 million. Sprint owns 40 percent of the venture, TCI 30 percent, and Cox and Comcast 15 percent each. Sprint and its cable consortium were the top bidders in the PCS auction, pledging a total of \$2.11 billion for 29 markets (representing 30% of the total paid in the auction), including the Salt Lake City MTA. The team's strategy was to win licenses in markets where the partners already had major cable holdings. Sprint cable team is expected to invest another \$2.7 billion to \$5.4 billion to construct new networks."<sup>103</sup>

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<sup>100</sup> Office of Engineering and Technology, FCC, PCS Experimental Applications By Filed Date (F.C.C., May 19, 1994).

<sup>101</sup> Amendment of the Commission's Rules to Establish New Personal Communications Services, Appendix B, FCC Gen. Docket No. 90-314, adopted July 16, 1992.

<sup>102</sup> Based on Pacific Bell wire center revenue data for Q1 1995.

<sup>103</sup> "Sprint and Cable-TV Partners Plan \$4.4 Billion Investment," *The New York Times*, March 29, 1995, p. D6.

One of the key purposes of the alliance is to provide customers with one-stop shopping across a wide range of services:

"The venture [Sprint, TCI, Comcast and Cox] will create an unprecedented communications alternative, packaging local telephone, long distance, and personal communications with cable services into a single offering for consumers and businesses. . . Consumers can look forward to the widest possible array of communications and entertainment services — delivered with unsurpassed quality and with all the assurances and conveniences of a strong national brand."<sup>104</sup>

"Sprint's consortium will compete in wireless and wired phone services and newer multimedia video and information offerings to be delivered over phone and cable networks. By marrying the local cable TV lines to Sprint's switching centers and national long-distance network, the new alliance will be able to provide one-stop-shopping for long-distance, local and wireless phone services."<sup>105</sup>

The Sprint Venture is actively building its base of potential customers through affiliations with cable companies across the country. Sprint recently announced that eight more cable operators including four in California have become affiliates with the joint venture. With these affiliates, the Venture passes nearly 40% of the homes in the U.S., and it is continuing to negotiate with cable companies across the country. The most recent affiliations strengthen Sprint Venture's presence in the Bay Area, where Intermedia Partners and Coastside Cable are based and Lenfest Group has a presence and in Los Angeles where Falcon Cable is based.<sup>106</sup>

Cable companies within the Sprint Venture have already begun joint marketing of cable and long distance services, providing customers discounts on a combined long distance, cable service offering. TCI, for example, is offering customers a \$2.00 to \$4.95 discount on their monthly cable bills for a year if they become Sprint long distance users.<sup>107</sup> This marketing campaign has been very

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<sup>104</sup> Notice of Ex Parte Communications By Sprint in R.95-04-043/I.95-04-044, June 5, 1995.

<sup>105</sup> "Sprint, 3 Cable Firms to Form Phone Venture," *The Wall Street Journal*, October 25, 1994, p. A3.

<sup>106</sup> "Venture's Wireline Reach Extends by Nearly 9 Million U.S. Homes," *PR Newswire*, September 18, 1995; "Technology & Telecommunications: Sprint Talks With Cable-TV Concerns In Push to Expand New Wireless Venture," *The Wall Street Journal*, January 26, 1995, p. B8.

<sup>107</sup> "Cable, long-distance connect for promos," *Broadcasting & Cable*, June 12, 1995, p. 28.

successful — initial results showed that 6% to 8% of consumers contacted by cable companies have signed up for Sprint compared to 2% to 3% that usually sign up for Sprint through direct marketing campaigns.<sup>108</sup>

#### **D. Analysis of Competitive Harm to Pacific Bell from Proposed Rules**

As described in greater detail by Professor Spulber, rate of return regulation is a contract between the people of California and the shareholders of Pacific Bell. Under that contract, Pacific has the right and the duty to provide ubiquitous telephone service to all customers in its service territory, whether or not the revenues from any given customer cover the costs of serving that customer. To meet its obligations, Pacific has made, and will continue to make, substantial capital investments in the state. In return, the state has committed itself to giving Pacific Bell the opportunity to earn a fair return on its investment. To now deny that opportunity in the name of competition or other public policy objective would constitute a flagrant case of "recontracting." In the remainder of this section, I explain how the Commission's interim and proposed initial rules and implementation schedule will cause substantial competitive harm to Pacific Bell, effectively denying it a reasonable opportunity to compete on a level playing field and a fair opportunity of capital recovery.

##### ***1. Implementation of intraLATA presubscription should coincide with removal of the interLATA restriction on Pacific Bell***

At least four factors are at work in intraLATA toll competition: (1) toll calling revenues are highly concentrated among customers; (2) "dialaround" is not a significant obstacle for many users; (3) customers prefer to purchase interexchange services from a single supplier; and (4) Pacific is competitively disadvantaged by the MFJ interLATA restriction and asymmetric state regulations.

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<sup>108</sup> "Sprint Cites Ambitious Goal; Boosted by Cable Alliance, it Aims to Add a Million Customers," *The Kansas City Star*, July 14, 1995, p. B1.

There are several important implications of the high concentration of toll revenues. First, by targeting their marketing and promotional pricing at high volume users, IXC's can gain a significant share of revenues, even though they serve only a small share of customers. Second, because high volume business customers tend to be concentrated in lower cost areas, the IXC's can gain a cost advantage by targeting their marketing efforts at those customers. In contrast to the IXC's, Pacific is obligated to serve as the intraLATA toll provider of last resort throughout its service area, at statewide average rates. Third, even if IXC's are required to offer service to all customers, they can use discount pricing to attract high margin customers, while leaving retail rates high enough not to attract low margin customers.

The fact that some customers are willing to use the five extra digits necessary to use an IXC for intraLATA calls shows that 10XXX — "dialaround" — is not a significant obstacle to intraLATA competition for these customers. Presumably, many of these customers have reprogrammed their PBX's to automatically insert the 10XXX code into the dialed number so it is transparent to the employee making the call. In addition to dialaround, many business customers redirect their traffic to IXC's across dedicated facilities. Because IXC's have already won a significant share of high volume users of intraLATA services, those customers do not necessarily gain any additional benefits from presubscription.

Considering that toll users have to dial (or program their PBX's to dial) five extra digits to use an IXC for intraLATA calls, the loss of intraLATA revenues by Pacific provides additional support for the proposition that many toll users have a strong preference for "one-stop shopping." It strengthens the validity of Pacific's concern that presubscription would further exacerbate the competitive disadvantage it suffers from not being able to offer customers both intraLATA and interLATA services in competition with IXC's who can.

Even without intraLATA presubscription, Pacific has already lost a substantial volume of high margin intraLATA traffic. Under the policies of this Commission, toll usage prices have been

set at levels that generate subsidies to maintain the price of basic exchange service and of toll service in rural areas. As competitors target the lower-cost and higher-volume customers, Pacific will be left with the obligation to serve higher cost and rural customers at statewide average rates. The loss of intraLATA traffic to date points to the vulnerability of Pacific to further loss of intraLATA revenues and contributions if intraLATA presubscription is ordered without corresponding relief from the interLATA restriction and asymmetric state price regulations and service obligations.

The IXC's are following a pricing strategy known in the industry as "pricing up, promoting back" — i.e., raising the basic retail rates for long distances calls, then offering discounts off those higher rates to high volume customers.

"Data compiled by the Bureau of Labor Statistics show that basic interstate long-distance rates... have been rising for the past four years—by nearly 10% from January, 1990, to July, 1994. . . The hikes offset the discount plans and, along with rising calling volume, helped the long-distance industry post a healthy 8%-plus revenue gain in the second quarter [of 1994]. . . As a recent study by market researcher Yankee Group Inc. notes, carriers 'seem to be funding the marketing wars lately by slowly increasing basic...rates.' . . . [AT&T increases in basic rates:] 4% in 8/93; 6.3% in 1/94; and 4% in 6/94...[Sprint and MCI] have raised their basic rates virtually in lockstep with AT&T." <sup>109</sup>

In their "Analysis of the MFJ Line of Business Restrictions," Douglas Bernheim and Robert Willig, testifying experts for AT&T, acknowledged the dominant pricing strategy of AT&T and other IXC's:<sup>110</sup>

"Since regulation holds basic rates below the costs of providing service to low volume customers, it is entirely natural for AT&T to raise basic rates whenever regulation permits (regardless of whether a change in regulation is associated with a change in AT&T's costs). This increases prices for low volume customers, and could perhaps have a transient effect on prices for high volume customers (due to the fact that discounts are usually expressed as fractions of basic rates)."

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<sup>109</sup> Arnst, Catherine. "All Those Long-Distance Discounts Are Sweet, But..." *Business Week*, September 19, 1994, pp. 66-67.

<sup>110</sup> Bernheim, Douglas and Robert Willig, "Analysis of the MFJ Line of Business Restrictions," December 1, 1994, pp. 139, 141.

"Each [interexchange] carrier has also introduced a variety of programs (usually targeted to more narrow niches), and each has repeatedly revised the terms of its primary competitive offerings to lure valued customers."

Many customers do not buy their long-distance service using one of the discount plans. A recent *Washington Post* article states:

"Long-distance companies counter [the charge that rates have risen] by saying that's the wrong way to look at it: Most of the country's long distance calls are made by people on discount plans, they say. Those who aren't on the plans hardly call long distance at all." Yet, "More than 60 percent of the nation's 97 million households don't subscribe to a long-distance discount plan...Surveys by AT&T, PNR Associates of Philadelphia and the Yankee Group all arrive at the conclusion that about 60 million households don't belong to a plan."<sup>111</sup>

The Commission should be careful to establish the necessary terms and conditions of balanced competition. The Commission should not defer these important issues to some later time. In order to realize the potential benefits of intraLATA presubscription and achieve the other public policy goals of the State, the Commission should develop and adopt a set of regulatory changes that reflect the significant change in competitive conditions that will result from intraLATA presubscription.

Mandating intraLATA presubscription without interLATA and regulatory relief creates an artificial competitive advantage for IXC's, which biases customers' choices of long distance carrier. If customers choose an IXC not because it is the more efficient or lower-priced provider but because it can offer both intraLATA and interLATA service, that is an uneconomic choice. If customers choose an IXC not because it is the low cost provider but because it can price below Pacific by exploiting Pacific's price averaging requirement and ubiquitous service obligation, that is an uneconomic choice. While these kinds of choices are perfectly rational from the customers' point of view, they are directly contrary to the State's interest in promoting economic efficiency and productivity in telecommunications services.

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<sup>111</sup> Mills, Mike, "Missing Out on Lower Long-Distance Bills," *The Washington Post*, July 2, 1995, p. A1.



Premature implementation of intraLATA presubscription will probably cause a significant loss of revenues and a disproportionate loss of contribution which reduces Pacific's incentive to invest in the telecommunications infrastructure of California. As the Commission considers and adopts policies for the implementation of full competition, it should recognize the importance of Pacific's role in facilitating competition and interconnection now and during the transition to full competition. Over the past decade, investments by local exchange carriers have been essential to the development of competition in interexchange services. Without substantial investments in improved switching capabilities, for example, there would be no "equal access" to IXCs. Without substantial LEC investments in common channel signaling (SS7), there would be no 800 number portability. For an interim period of several years, LECs, including Pacific, will serve an important role in the "network of networks," providing interconnection and ensuring interoperability across a rapidly growing number of competing and cooperating communications networks and services. If intraLATA presubscription is timed to coincide with interLATA relief, Pacific will have the opportunity to compete with IXCs on even terms, offset the loss of intraLATA revenues with interLATA revenues, and maintain its incentive to invest in the telecommunications infrastructure of California.

Moreover, if the IXCs exercise the same kind of pricing strategy in intraLATA services that they are following in interLATA services, — and, given the chance, I believe they will — low volume, low income and rural customers will not benefit from their target marketing practices and price discrimination. With simultaneous interLATA relief, intraLATA presubscription can, by enabling Pacific to compete fairly with IXCs, reduce the degree of price discrimination and thereby ensure that low volume, low income and rural customers also benefit from competition in intraLATA and interLATA services.

If Pacific is required to provide intraLATA presubscription, Pacific must be allowed to compete on an equal basis, including interexchange services. InterLATA relief would enable Pacific to compete for business in faster growing markets, maintain contributions to common costs, and relieve upward pressure on basic service rates. Relief would also enable Pacific to provide end-to-end